Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-18. (Cancelled)

19. (New) A refrigerator comprising:

a cooling chamber for cooling a food item placed therein; and

a compressor having an adjustable cooling capacity;

a temperature sensor providing a signal representative of the temperature of the cooling chamber; and

a controller operably coupled to the compressor and temperature sensor to receive the signal to determine a variation of the temperature over time and adjust the cooling capacity of the compressor in response to the variation of the temperature in the cooling chamber.

20. (New) A refrigerator according to claim 19, wherein the controller determines the load of the food items in the cooling chamber from the temperature variation.

21. (New) A refrigerator according to claim 20, wherein the controller determines the load by estimating an enthalpy of the food items in the cooling chamber.

22. (New) A refrigerator according to claim 19, wherein the controller adjusts the cooling capacity by adjusting at least one of the speed and run time of the compressor.

23. (New) A method for controlling a cooling capacity of a compressor in a refrigerator having a cooling compartment, comprising:

determining a variation in the temperature of the cooling compartment in response to an increased enthalpy at least one food item in the cooling compartment; and

adjusting the cooling capacity of the compressor in response to the determined variation in the temperature to increase the rate of cooling as compared to a rate of cooling without an increase in enthalpy.

24. (New) A method according to claim 23 wherein the adjusting of the cooling capacity is in proportion to the determined temperature variation.

25. (New) A method according to claim 24 wherein the determined temperature variation comprises comparing a sensed temperature of the cooling compartment to a reference temperature.

26. (New) A method according claim 21, wherein the increased enthalpy is attributable to the placement of a food item inside the refrigerator.

27. (New) A method according to claim 21, wherein the adjusting the cooling capacity comprises analyzing a shape factor of the determined temperature variation, wherein such shape factor is selected from the group consisting of derivatives, area, peak, overshoot duration, and power spectrum.

28. (New) A method according to claim 27, wherein the adjusting of the cooling capacity further comprises estimating the enthalpy of the food from an analysis of at least one of the shape factors.

29. (New) A method according to claim 28, wherein adjusting the cooling capacity comprises adjusting at least one of the speed and run time of the so that at least one of the

integral and the peak of the determined temperation variation is below a reference temperature.

30. (New) A method according to claim 29 wherein the reference temperature is an average temperature.

31. (New) A method according to claim 28 wherein the adjusting of the cooling capacity is proportional to the estimated enthalpy.

32. (New) A method according to claim 27, wherein the determining the temperature variation comprises sensing the temperature in the cooling compartment and comparing the sensed temperature to a reference value.

33. (New) A method according to claim 32, wherein the comparison determines when the sensed temperature is above the reference value.

34. (New) A method according to claim 33, and further comprising estimating an enthalpy of a food item placed in the refrigerator from at least the overshoot shape of the sensed temperature, and increasing the cooling capacity of the variable capacity compressor so that at least one of an integral and a peak of the temperature variation below the reference value is proportional to the estimated enthalpy.

35. (New) A method according to claim 33, and further comprising processing shape factors such as areas and derivatives of the temperature sensor output signals using soft computing techniques such as fuzzy logic and neural networks to provide an estimated enthalpy of a food item and to adapt the compressor response thereto.

36. (New) A method according to claim 33, and further comprising switching the compressor to one of on and off when a temperature inside the refrigerator reaches one of a nominal cut-on temperature and cut-off temperature, respectively, so that that such cut-on temperature and cut-off temperature are adjusted according to an estimated enthalpy

and are progressively readjusted to the nominal values in order to provide an energy efficient cooling.

37. (New) A method according to claim 33, and further comprising determining an integral of the temperature variation above the reference value, and increasing the cooling capacity of the variable capacity compressor so that at least one of the integral and a peak value of the temperature variation is proportional to the integral.

38. (New) A method according to claim 33, and further comprising determining a derivative of a decrease in the sensed temperature below the reference value and increasing the cooling capacity of the variable capacity compressor so that at least one of the derivative and the peak of the temperature variation is inversely proportional to the estimated derivative.

39. (New) A method according to claim 23, and further comprising adjusting the cooling capacity of the compressor pursuant to the application of a control algorithm based on a proportional-derivative-integral technique according to the formula

$$u(t) = Kp * [e(t) + \frac{1}{Ti} * \int_0^t e(t)\,dt + Td * \frac{de(t)}{dt}]$$

wherein

$u(t)$ = compressor cooling capacity request;

Kp = preselected coefficient,

$e(t)$ = temperature error = $T_{probe} - T_{target}$,

Ti = integral time,

Td = derivative time,

T_{target} = temperature reference depending on user set temperature.

40. (New) A method according to claim 39, and further comprising adjusting the parameters Ti, Td, and Kp according to one of opening the refrigerator door and detecting a sudden rise in temperature in order to speed up a cooling time.